IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Steven Clay Moore		§	Group Art Unit:	2636
Serial No.:	10/607,291	§	Examiner:	Mehmood, Jennifer A.
Date Filed:	June 27, 2003	§	Confirmation No.:	8734
Title:	Turn Signal Indicating The Vehicle Is Turning	§	Atty Docket No.:	AMG.4017.PAT

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REPLACEMENT APPEAL BRIEF UNDER 37 C.F.R. §41.37 RESPONSIVE TO NOTIFICATION OF NON-COMPLIANT BRIEF

This paper is a brief to replace the original brief submitted pursuant to 37 CFR §41.37 in furtherance of the Notice of Appeal filed on April 27, 2007 for the above referenced patent application. This paper appeals final rejections imposed by the USPTO on claims in the above referenced patent application to the Board of Patent Appeals and Interferences ("Board") after careful consideration to address issues associated with the final rejections.

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I. REAL PARTY IN INTEREST

The real party in interest is Steve C. Moore having a principle place of business at 8211 Long Canyon Dr., Austin, TX 78732, as sole inventor and owner of patent(s) resulting from the above-referenced patent application. No assignments have been made or made of record as of the date of this appeal brief.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals nor interferences known to Appellants, Appellants' legal representative, or assignee which will directly affect or be directly affected by or having a bearing on the Board's decision in this pending appeal.

III. STATUS OF CLAIMS

Claims 1-40 are pending and claims 1-40 stand rejected. Claims 1-40 are appealed herein. Claims 1-40 stand rejected by a final Office action dated December 28, 2006. More particularly:

1) Claims 1, 2, 4-7, 14, 16, 17, 20, 22, 24, and 28 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over Middlebrook et al., U.S. Pat. 4,638,295 (hereinafter "Middlebrook").
2) Claims 11-13, 18, 36, 37, and 39 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over Dantoni, U.S. Pat. 5,673,019 (hereinafter "Dantoni").
3) Claims 8, 9, 21, 25, 26, 29, 30, 32, 33, and 35, stand rejected under 35 USC § 103(a) as being unpatentable over Middlebrook in view of Dantoni.
4) Claim 19 stands rejected under 35 USC § 103(a) as being unpatentable over Dantoni in view of Middlebrook.
5) Claims 3, 10, 15, and 23 stand rejected under 35 USC § 103(a) as being unpatentable over Middlebrook in view of Goertler, U.S. Pat. 4,348,655 (hereinafter "Goertler").
6) Claims 27, 31, and 34 stand rejected under 35 USC § 103(a) as being unpatentable over Middlebrook in view of Dantoni and in further view of Goertler.

7) Claims 38, and 40 stand rejected under 35 USC § 103(a) as being unpatentable over Dantoni in view of Goertler.

IV. STATUS OF AMENDMENTS

All amendments filed up through the response dated November 6, 2006 to the Non-final Office action dated June 20, 2006 have been entered. An after final amendment was filed on March 28, 2007 but was not been entered. No other amendments have been filed subsequent to the final rejection. The claims found in the Exhibit of this Appeal Brief reflect the appealed claims as they are understood by the Appellants at the date of this appeal.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Appellants' independent claim 1 as currently presented claims a system to sense when a turn signal for a vehicle is active and the vehicle is turning. (*See, e.g.,* Specification, pg. 3, sect entitled "Detailed Description of the Invention", first par., first and second sent.).[1] The system is designed to indicate that the vehicle is turning by varying a frequency and/or intensity with which the turn signal blinks, signaling to other motorists that the vehicle is turning. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", last par., first and second sent.). The frequency and/or intensity with which the turn signal blinks is varied based upon an amount of time during which the vehicle is turning. (*See, e.g.,* Specification, Abstract). For instance, one embodiment describes the analog adjustment of the frequency and amplitude with which the turn signal lamps are driven. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", last par., second sent.). Furthermore, as described in claim 4, another embodiment describes the control of pulse generators or other integrated circuits where the duty cycle and amplitude of the output signal is dependent upon analog voltage levels. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", second par., last sent.).

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[1] Note that "Specification" hereinafter refers to Application no. 10/607,29] filed June 27, 2003, for inventor Steve Clay Moore, entitled "Turn Signal Indicating The Vehicle Is Turning"}.

Appellants' dependent claim 4 incorporates the claims limitations of claim 1 and adds that a shaft position sensor, or other resistive, capacitive or inductive sensor, to determine an amount to alter the frequency or intensity of the turn signal. (*See, e.g.,* Specification, pg. 3, sect entitled "Detailed Description of the Invention", first par.). And, Appellants' dependent claim 5 incorporates the claims limitations of claim 1 and adds wherein the system is adapted to adjust the turn signal frequency and/or intensity proportionally to a position of a shaft and/or the amount of time. (*See, e.g.,* Specification, pg. 4, sect entitled "Detailed Description of the Invention", first full par.).

Appellants' independent claim 6 as currently presented claims an apparatus to communicate a turn of a vehicle. The apparatus comprises a sensor to detect a position of a shaft of the vehicle; a control circuit to generate an output signal, wherein the output signal varies in proportion to the position of the shaft, and a turn signal lamp to produce a turn signal based upon the output signal. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", last par., first and second sent.). The output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par.). For instance, the specification describes implementation of a commercially available sensor to detect the position of the shaft as opposed to detection of angular displacement. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", first par., fourth and last sent.).

Appellants' independent claim 11 as currently presented claims an apparatus to communicate a turn of a vehicle. The apparatus comprises a sensor to detect an angle of a wheel of the vehicle, a control circuit to generate an output signal, wherein the output signal varies based upon the angle of the wheel, and a turn signal lamp to produce a turn signal based upon the output signal, wherein the angle of the wheel varies the frequency and/or intensity with which the turn signal lamp blinks. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par.). For instance, the specification describes implementation of resistive, capacitive, and inductive sensors to detect the angle of the wheels. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", first par., fourth and last sent.).

Appellants' independent claim 14 as currently presented claims a vehicle comprising a shaft; a sensor to detect a position of a shaft; a control circuit to generate an output signal, wherein the output signal varies in proportion to the position of the shaft;

and a turn signal lamp to produce a turn signal based upon the output signal. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", last par., first and second sent.). The output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par.). For instance, the specification describes implementation of a commercially available sensor to detect the position of the shaft as opposed to detection of angular displacement. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", first par., fourth and last sent).

Appellants' independent claim 16 as currently presented claims a vehicle comprising a wheel to turn the vehicle; a sensor to indicate whether the vehicle is turning; a control circuit to determine a sensor signal indicative of an amount of time that the vehicle has been turning and to generate an output signal, wherein the output signal varies based upon the amount of time; and a turn signal lamp to produce a turn signal based upon the output signal. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par., last sent.). The frequency and/or intensity with which the turn signal lamp blinks is varied based upon the amount of time. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par.).

Appellants' independent claim 18 as currently presented claims a vehicle comprising a wheel; a sensor to detect an angle of the wheel; a control circuit to generate an output signal, wherein the output signal varies based upon the angle of the wheel; and a turn signal lamp to produce a turn signal based upon the output signal, wherein the angle of the wheel varies the frequency and/or intensity with which the turn signal lamp blinks. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par.). For instance, the specification describes implementation of resistive, capacitive, and inductive sensors to detect the angle of the wheels. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", first par., fourth and last sent.).

Appellants' independent claim 20 as currently presented claims a method for communicating a turn of a vehicle. The method includes generating an output signal with a frequency that varies in proportion to a position of a shaft; and outputting a turn signal in response to application of the output signal to a turn signal lamp, wherein the turn

signal flashes in relation to the frequency. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", last par., first and second sent.). Separately rejected dependent claims 21, 23, and 24 add limitations for varying the intensity, duty cycle, and frequency of the turn signal with the output signal.

Appellants" independent claim 25 as currently presented claims a method for communicating a turn of a vehicle. The method includes generating a output signal based upon an angle of a wheel of the vehicle to communicate the turn; and applying the output signal to a turn signal lamp to vary a frequency with which the turn signal flashes based upon an angle of a wheel of the vehicle while the vehicle is turning. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", last par., first and second sent.). For instance, the specification describes implementation of resistive, capacitive, and inductive sensors to detect the angle of the wheels. (*See, e.g.,* Specification, pp. 3-4, sect. entitled "Detailed Description of the Invention", first par., fourth and last sent.). Separately rejected dependent claim 27 adds a limitation for varying the duty cycle and amplitude of the turn signal with the output signal.

Appellants' independent claim 28 as currently presented claims a method for communicating a turn of a vehicle. The method includes generating an output signal to communicate the turn, wherein a frequency of the output signal varies based upon an amount of time the vehicle has been moving while the wheels are turned at an angle; and applying the output signal to a turn signal lamp to vary a frequency with which the turn signal flashes. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par., last sent.). Separately rejected dependent claims 29 and 31 add limitations for varying the intensity and duty cycle and amplitude of the turn signal with the output signal.

Appellants' independent claim 32 as currently presented claims a method for communicating a turn of a vehicle. The method includes determining an amount of time the vehicle has been moving while the wheels are turned; varying an output signal based upon the amount of time; and applying the output signal to a turn signal lamp to produce a turn signal, wherein an intensity with which the turn signal lamp blinks is based upon the amount of time. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par.). Separately rejected dependent claims 33 and 34 add limitations for varying the frequency and duty cycle of the turn signal with the output signal.

Appellants' independent claim 36 as currently presented claims a method for communicating a turn of a vehicle. The method includes sensing an angle of a wheel of the vehicle while the vehicle is moving; generating an output signal based upon the angle; and applying the output signal to a turn signal lamp to vary an intensity with which the turn signal lamp blinks based upon the angle. (*See, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par.). For instance, the specification describes implementation of resistive, capacitive, and inductive sensors to detect the angle of the wheels. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", first par., fourth and last sent.). Separately rejected dependent claim 38 adds a limitation for varying the duty cycle and amplitude of the turn signal with the output signal.

Appellants' independent claim 39 as currently presented claims a method for communicating a turn of a vehicle. The method includes sensing a position of a shaft of the vehicle; generating an output signal for the vehicle, wherein a wattage of the output signal varies based upon the position of the shaft; and applying the output signal to a turn signal lamp to vary an intensity with which the turn signal lamp blinks based upon the position. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", last par., first and second sent.; *See also, e.g.,* Specification, pg. 4, sect. entitled "Detailed Description of the Invention", first full par.). For instance, the specification describes implementation of a commercially available sensor to detect the position of the shaft as opposed to detection of angular displacement. (*See, e.g.,* Specification, pg. 3, sect. entitled "Detailed Description of the Invention", first par., fourth and last sent.). Separately rejected dependent claim 40 adds a limitation for varying the duty cycle and amplitude of the turn signal with the output signal.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1) Claims 1, 2, 4-7, 14, 16, 17, 20, 22, 24, and 28 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over Middlebrook.

2) Claims 11-13, 18, 36, 37, and 39 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over Dantoni.

3) Claims 8, 9, 21, 25, 26, 29, 30, 32, 33, and 35, stand rejected under 35 USC § 103(a) as being unpatentable over Middlebrook in view of Dantoni.

4) Claims 19 stand rejected under 35 USC § 103(a) as being unpatentable over Dantoni and Middlebrook.

5) Claims 3, 10, 15, and 23 stand rejected under 35 USC § 103(a) as being unpatentable over Middlebrook and Goertler.

6) Claims 27, 31, and 34 stand rejected under 35 USC § 103(a) as being unpatentable over Middlebrook in view of Dantoni and Goertler.

7) Claims 38, and 40 stand rejected under 35 USC § 103(a) as being unpatentable over Dantoni in view of Goertler.

VII. ARGUMENT

Claim rejections under 35 USC § 102(b)

Claims 1, 4, 5, 6, 14, 16, 20, and 28 stand rejected under 35 USC § 102(b) as being anticipated by Middlebrook and claims 11, 18, 36, and 39 stand rejected under 35 USC § 102(b) as being anticipated by Dantoni. Applicant respectfully traverses the rejections in the following remarks.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference.[2] Furthermore, the identical invention must be shown in as complete detail as is contained in the claim.[3]

Middlebrook does not anticipate claim 1

[2] *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).
[3] *Richardson v. Suzuki Motor Co.,* 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

With regards to independent claim 1, the Office action fails to establish a prima facie case of anticipation by Middlebrook because citations of Middlebrook provided as support for the rejections fail to describe, suggest or teach "each and every element as set forth in the claim[s]". In particular, claim 1 states:

> A system to sense when a turn signal for a vehicle is active and the vehicle is turning and ***indicate that the vehicle is turning by varying a frequency and/or intensity with which the turn signal blinks, signaling to other motorists that the vehicle is turning, wherein the frequency and/or intensity with which the turn signal blinks is varied based upon an amount of time during which the vehicle is turning.***-(emphasis added).

As cited, Middlebrook describes two distinct groups of inputs for the processor. The first group is a "[s]witch sensor group 102 [that] includes a steering wheel position switch 52, a turn indicator switch 54, a back-up switch 56, a brake switch 58, and an accelerator at rest switch 60...." (Middlebrook at col. 4, lines 66-68 and col. 5, lines 1-2). The second sensor group is "[t]he engine and vehicle sensor group 104 [that] includes a speedometer cable pick off sensor 74, an engine rpm (ignition primary) sensor 78 and a diesel rpm (mechanical) sensor 82...." (Middlebrook at col. 5, lines 29-32). "The purpose of the switch sensors in group 102 is to indicate the intention of the vehicle to make a turn. The purpose of the engine and vehicle sensors in group 104 is to indicate the commitment of the vehicle to the turn anticipated by the switches in group 102...." (Middlebrook at col. 5, lines 37-42). Middlebrook describes multiple examples wherein the sensors of the switch sensor group detect the intention to turn based upon the steering wheel position switch, turn indicator switch, back-up switch, brake switch, and accelerator at rest switch. And, in those examples, one or more of the sensors in the engine and vehicle sensors group are used to determine whether the vehicle is committed to the turn. There is no explicit indication in Middlebrook that Middlebrook considers the amount of time during which the vehicle is turning as an input to determine to adjust the flash rate of the turn signal from 80 flashes per minute to 200 flashes per minute. In fact, Middlebrook changes the flash rate from 80 flashes per minute to 200 flashes per minute "coincident with the initiation of vehicular movement"[4] without stating, explicitly

[4] Middlebrook, col. 2, lines 29-39.

or inherently, that the change is related to a particular amount of time whereas claim 1 describes "...varying a frequency and/or intensity with which the turn signal blinks... based upon an amount of time during which the vehicle is turning."

In the Final Office action dated December 28, 2006, the examiner argues that, in Middlebrook, time inherently passes while the vehicle is turning, before the motion detector senses vehicle movement and, thus, claim 1 is anticipated:

> ...the amount of time is interpreted as a window of time during which vehicle movement or motion occurs from a first position of a vehicle to a second position of a vehicle. For example, during a first time, the vehicle is at zero time when the vehicle is stopped and the turn signal is activated while the vehicle is waiting to move into a turn, but not yet turning. **The vehicle is at a time greater than zero when the motion detector senses vehicle movement and actual turning of the vehicle occurs. While the turning process occurs, the frequency with which the turn signal lamps flash are varied**....[5]

The basis for the examiner's argument that Middlebrook anticipates claim 1 contradicts the explicit teachings of Middlebrook. Middlebrook explicitly states that "...**coincident** with the initiation of vehicular movement the front wheel turn sensor and the motor vehicle movement sensor signal information to the microprocessor which in turn causes the signal lamps to flash at a rate of 200 flashes per minute."[6] In other words, contrary to the examiner's argument, Middlebrook states that there is no time period between the movement and sensing the movement because they are "coincident". Middlebrook supports the characterization that the movement is "coincident" with sensing by describing sensors that anticipate movement of the wheels of the vehicle rather than directly measure movement of the wheels. Middlebrook describes two primary types of sensors for determining the commitment to turn, a speedometer cable pickup sensor and an engine accelerometer.[7] The speedometer cable pickup sensor does not directly measure movement of the wheels of the vehicle, it anticipates movement of the wheels by measuring movement of a gear within the transmission of a vehicle.

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[5] Emphasis added.
[6] Middlebrook, col. 2, lines 29-39.
[7] Middlebrook, col. 5, lines 29-32 ("The engine and vehicle sensor group 104 includes a speedometer cable pick off sensor 74, an engine rpm (ignition primary) sensor 78 and a diesel rpm (mechanical) sensor 82."); *also see* figs. 2A, 3, and 4 (elements 74, 78, and 82).

Similarly, the engine accelerometer does not directly measure movement of the vehicle, it measures rotational displacement of a cam shaft or rotor of the engine.

On the other hand, claim 1 describes "...varying a frequency and/or intensity with which the turn signal blinks... based upon an amount of time during which the vehicle is turning." Even if there was a time period between movement and sensing, the time period is incidental. Middlebrook does not base the new intensity or frequency on the time period. Middlebrook does not describe, teach or suggest, expressly or inherently, "...varying a frequency and/or intensity with which the turn signal blinks... based upon an amount of time during which the vehicle is turning." Therefore, Middlebrook does not anticipate claim 1 and the rejection of claim 1 should be reversed.

With regards to claims 2-5, Applicant submits that claims 2-5 incorporate the limitations of claim 1. So Applicant respectfully requests that the rejections of claims 2-5 also be reversed.

Middlebrook does not anticipate claim 4

Assuming arguendo that Middlebrook anticipates claim 1, Middlebrook fails to anticipate claim 4. Claim 4 states:

> [t]he system as described in claim 1, further comprising a shaft position sensor, or other resistive, capacitive or inductive sensor, to determine an amount to alter the frequency or intensity of the turn signal.

Middlebrook describes a wheel position sensor. The examiner argues that the steering wheel has a shaft and thus anticipates claim 4. Middlebrook describes the steering wheel sensor as a sensor to indicate an intention to turn. After sensing an intention to turn, e.g., when the vehicle is stopped and the steering wheel is turned to the left, Middlebrook must sense a commitment to turn before altering the turn signal from 80 flashes per minute to 200 flashes per minute.[8] Middlebrook describes the steering wheel position switch as an indicator of an intention to turn. Middlebrook does not describe the wheel position sensor as a sensor "to determine an amount to alter the frequency or intensity of the turn signal."

[8] *See* Middlebrook col. 1, lines 7-15.

One might argue that Middlebrook describes one embodiment in which the degree of turn of the steering wheel can be utilized to conclude a commitment to a turn if the speedometer cable pickup sensor indicates the vehicle is moving and speed is increasing.[9] However, the steering wheel position switch does not "...determine an amount to alter the frequency or intensity of the turn signal." The steering wheel position switch determines a degree of the turn, which is transmitted to the microprocessor. If the degree is interpreted as an intention to turn, the microprocessor changes the flash rate to the predetermined fast flash rate. Thus, Middlebrook does not anticipate claim 4 so Applicant respectfully requests that the rejection of claim 4 be reversed.

Middlebrook does not anticipate claim 5

Assuming arguendo that Middlebrook anticipates claim 1, Middlebrook fails to anticipate claim 5. Claim 5 states:

> [t]he system described in claim 1, wherein the system is adapted to adjust the turn signal frequency and/or intensity proportionally to a position of a shaft and/or the amount of time.

Middlebrook changes the flashing from 80 flashes per minute to 200 flashes per minute when the vehicle commits to the turn, which is described by Middlebrook as the initiation of vehicle movement.

> The invention relates to a vehicular movement indicator safety system which distinguishes between a driver's intention to turn as indicated by existing turn signal equipment and the actual equipment to an initiation of the turn and signals the actual movement information to other vehicles **by automatically activating rapidly increased flashing of the turn signal lamps coincident with the vehicular movement**.[10]
>
> If the vehicle is stopped and the turn signal switch is activated then the flashing lamps will flash at the rate of eighty flashes per minute.... Coincident with the initiation of vehicular movement the front wheel turn sensor and the motor vehicle movement sensor signal information to the microprocessor which in turn causes the signal lamps to flash at a rate of 200 flashes per minute.[11]

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[9] Middlebrook, col. 6, klines 21-60.
[10] Middlebrook, col. 1, lines 7-14; emphasis added.
[11] Middlebrook, col. 2, lines 29-39.

Middlebrook describes a system to initiate the higher, predetermined flash rate when the vehicle starts turning. Middlebrook does not describe the predetermined flash rate as being proportional to a position of a shaft and/or an amount of time. Middlebrook does not describe a "system ...adapted to adjust the turn signal frequency and/or intensity proportionally to a position of a shaft and/or the amount of time." Thus, Middlebrook does not anticipate claim 5 so Applicant respectfully requests that the rejection of claim 5 be reversed.

Middlebrook does not anticipate claim 6

With regards to claim 6, the Office action fails to establish a prima facie case of anticipation by Middlebrook because citations of Middlebrook provided as support for the rejections fail to describe, suggest or teach "each and every element as set forth in the claim[s]". In particular, claim 6 states:

> An apparatus to communicate a turn of a vehicle, the apparatus comprising:
> a sensor to detect a position of a shaft of the vehicle;
> **a control circuit to generate an output signal, wherein the output signal varies in proportion to the position of the shaft; and**
> **a turn signal lamp to produce a turn signal based upon the output signal, wherein the output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft.**-(emphasis added).

The examiner argues that:

> Middlebrook does disclose the output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft. Since movement of the positions of the steering column shaft produces an output signal that visually alters a turn signal lamp by frequency (blinking rate).

Middlebrook describes the steering wheel sensor as a sensor to indicate an intention to turn. After sensing an intention to turn, e.g., when the vehicle is stopped and the steering wheel is turned to the left, Middlebrook must sense a commitment to turn

before altering the turn signal from 80 flashes per minute to 200 flashes per minute.[12] Middlebrook describes the steering wheel position switch as an indicator of an intention to turn. Middlebrook does not describe "...a turn signal lamp to produce a turn signal based upon the output signal, wherein the output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft."

One might argue that Middlebrook describes one embodiment in which the degree of turn of the steering wheel can be utilized to conclude a commitment to a turn if the speedometer cable pick indicates the vehicle is moving and speed is increasing.[13] However, Middlebrook does not describe a microprocessor nor steering wheel position switch that produces an output signal that "...varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft." The steering wheel position switch determines a degree of the turn, which is transmitted to the microprocessor. If the degree is interpreted as an intention to turn, the microprocessor changes the flash rate to the predetermined fast flash rate. Thus, Middlebrook does not anticipate claim 6 so Applicant respectfully requests that the rejection of claim 6 be reversed.

With regards to claims 7-10, Applicant submits that claims 7-10 incorporate the limitations of claim 6. So Applicant respectfully requests that the rejections of claims 7-10 be reversed.

Middlebrook does not anticipate claim 14

With regards to amended claim 14, the Office action fails to establish a prima facie case of anticipation by Middlebrook because citations of Middlebrook provided as support for the rejections fail to describe, suggest or teach "each and every element as set forth in the claim[s]". In particular, amended claim 14 states:

> A vehicle comprising:
> a shaft;
> a sensor to detect a position of a shaft;
> **a control circuit to generate an output signal, wherein the output signal varies in proportion to the position of the shaft; and**

[12] *See* Middlebrook col. 1, lines 7-15.
[13] Middlebrook, col. 6, klines 21-60.

> **a turn signal lamp to produce a turn signal based upon the output signal, wherein the output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft**.-(emphasis added).
>
> The examiner argues that:
>
> Middlebrook does disclose the output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft. Since movement of the positions of the steering column shaft produces an output signal that visually alters a turn signal lamp by frequency (blinking rate).

Middlebrook describes the steering wheel sensor as a sensor to indicate an intention to turn. After sensing an intention to turn, e.g., when the vehicle is stopped and the steering wheel is turned to the left, Middlebrook must sense a commitment to turn before altering the turn signal from 80 flashes per minute to 200 flashes per minute.[14] Middlebrook describes the steering wheel position switch as an indicator of an intention to turn. Middlebrook does not describe "...a turn signal lamp to produce a turn signal based upon the output signal, wherein the output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft."

One might argue that Middlebrook describes one embodiment in which the degree of turn of the steering wheel can be utilized to conclude a commitment to a turn if the speedometer cable pick indicates the vehicle is moving and speed is increasing.[15] However, Middlebrook does not describe a microprocessor nor steering wheel position switch that produces an output signal that "...varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft." The steering wheel position switch determines a degree of the turn, which is transmitted to the microprocessor. If the degree is interpreted as an intention to turn, the microprocessor changes the flash rate to the predetermined fast flash rate. Thus, Middlebrook does not anticipate claim 14 so Applicant respectfully requests that the rejection of claim 14 be reversed.

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[14] *See* Middlebrook col. 1, lines 7-15.
[15] Middlebrook, col. 6, klines 21-60.

With regards to claim 15, Applicant submits that claim 15 incorporates the limitations of claim 14. So Applicant respectfully requests that the rejection of claim 15 be reversed.

Middlebrook does not anticipate claims 16, 20, and 28

With regards to claims 16, 20, and 28, the Office action fails to establish a prima facie case of anticipation by Middlebrook because citations of Middlebrook provided as support for the rejections fail to describe, suggest or teach "each and every element as set forth in the claim[s]". In particular, claim 16 states:

> A vehicle comprising:
> a wheel to turn the vehicle;
> a sensor to indicate whether the vehicle is turning;
> a control circuit to determine a sensor signal indicative of an amount of time that the vehicle has been turning and to generate an output signal, wherein the output signal varies based upon the amount of time; and
> a turn signal lamp to produce a turn signal based upon the output signal, **wherein the frequency and/or intensity with which the turn signal lamp blinks is varied based upon the amount of time**.–(emphasis added).

Middlebrook describes switching the frequency of the turn signal from 80 flashes per minute to 200 flashes per minute and vice versa in response to vehicle movement or engine acceleration. Middlebrook does indicate that time that the vehicle has been turning is a factor in determining the flash rate. Middlebrook does not describe, teach or suggest, expressly or inherently, "[a] vehicle ... wherein the frequency and/or intensity with which the turn signal lamp blinks is varied based upon the amount of time [that the vehicle has been turning]." Thus, Applicant respectfully requests that the rejection of claim 16 be reversed.

With regards to claims 17-19, Applicant submits that claims 17-19 incorporate the limitations of claim 16. So Applicant respectfully requests that the rejections of claim 17-19 be reversed.

Claim 20 states:

A method for communicating a turn of a vehicle, the method comprising:

> generating an output signal with a frequency that varies in proportion to a position of a shaft; and
> outputting a turn signal in response to application of the output signal to a turn signal lamp, wherein the turn signal flashes in relation to the frequency.-(emphasis added).

As cited, Middlebrook describes switching the frequency of the turn signal from 80 flashes per minute to 200 flashes per minute and vice versa in response to vehicle movement or engine acceleration. Middlebrook does not describe, teach or suggest, expressly or inherently, "...a frequency that varies in proportion to a position of a shaft..." Thus, Applicant respectfully requests that the rejection of claim 20 be reversed.

With regards to claims 21-24, Applicant submits that claims 21-24 incorporate the limitations of claim 20. So Applicant respectfully requests that the rejections of claim 21-24 be reversed.

Claim 28 states:

> A method for communicating a turn of a vehicle, the method comprising:
> **generating an output signal to communicate the turn, wherein a frequency of the output signal varies based upon an amount of time the vehicle has been moving while the wheels are turned at an angle; and**
> **applying the output signal to a turn signal lamp to vary a frequency with which the turn signal flashes**.-(emphasis added).

As cited, Middlebrook describes switching the frequency of the turn signal from 80 flashes per minute to 200 flashes per minute and vice versa in response to vehicle movement or engine acceleration. Middlebrook does not describe, teach or suggest, expressly or inherently, "...generating an output signal ... wherein a frequency of the output signal varies based upon an amount of time the vehicle has been moving while the wheels are turned at an angle; and applying the output signal to a turn signal lamp to vary a frequency with which the turn signal flashes...." Thus, Applicant respectfully requests that the rejection of claim 28 be reversed.

With regards to claims 29-31, Applicant submits that claims 29-31 incorporate the limitations of claim 28. So Applicant respectfully requests that the rejections of claim 29-31 be reversed.

Claim rejections under 35 USC § 103(a)

The Office action rejected claims 2-5, 8-10, 15-17, 19-31, and 33-40 under 35 USC § 103(a) as being unpatentable over Middlebrooke in view of Dantoni. Applicant traverses the rejections with the arguments above in conjunction with the arguments below.

To establish a prima facie case of obviousness, the modification or combination must teach or suggest all of Applicants' claim limitations.[16]

Middlebrooke in view of Dantoni does not make claim 25 obvious

With regards to amended claim 25, the Office action fails to establish a prima facie case of obviousness by Middlebrooke in view of Dantoni because citations of Middlebrooke and Dantoni provided as support for the rejections fail to teach or suggest all of Applicants' claim limitations.[17] In particular, amended claim 25 states:

> A method for communicating a turn of a vehicle, the method comprising:
> generating a output signal based upon an angle of a wheel of the vehicle to communicate the turn; and
> **applying the output signal to a turn signal lamp to vary a frequency with which the turn signal flashes based upon an angle of a wheel of the vehicle while the vehicle is turning**.-(emphasis added).

The Office action states:

> ...interpreted and rejected for the **same reasons as stated in the rejection of claims 11 and 20 as stated above regarding angle of wheel**. (emphasis added).

As cited, Dantoni describes turning on one to three lamps based upon the position of the shaft. The turn signal lamps are either on or off. Middlebrooke's disclosure describes switching the frequency of the turn signal from 80 flashes per minute to 200 flashes per minute and vice versa in response to vehicle movement or engine acceleration. The combination of Dantoni and Middlebrook essentially changes the frequency from 80 to 200 flashes per minute in response to vehicle movement or engine acceleration and turns on up to three bulbs to indicate the position of the shaft. Neither

[16] *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).
[17] *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

patent describes, teaches, or suggests "applying the output signal to a turn signal lamp to vary a frequency with which the turn signal flashes based upon an angle of a wheel of the vehicle while the vehicle is turning." Therefore, the combination of Dantoni and Middlebrooke not only requires the use of impermissible hindsight[18] to attempt to reconstruct Applicants' invention, but the combination fails to achieve all of the elements of the claims. Applicant respectfully requests that the rejection of claim 25 be reversed.

With regards to claims 26-27, Applicant submits that claims 26-27 incorporate the limitations of claim 25. So Applicant respectfully requests that the rejections of claims 26-27 under 35 USC § 103(a) be reversed.

Middlebrooke in view of Dantoni does not make claim 32 obvious

With regards to independent claim 32, the Office action fails to establish a prima facie case of obviousness by Dantoni in view of Middlebrooke because citations of Dantoni and Middlebrooke provided as support for the rejections fail to teach or suggest all of Applicants' claim limitations.[19] In particular, claim 32 states:

> A method for communicating a turn of a vehicle, the method comprising: determining an amount of time the vehicle has been moving while the wheels are turned; varying an output signal based upon the amount of time; and
> **applying the output signal to a turn signal lamp to produce a turn signal, wherein an intensity with which the turn signal lamp blinks is based upon the amount of time.**-(emphasis added).

As cited, Dantoni describes turning on one to three lamps based upon the position of the shaft. The turn signal lamps are either on or off. Middlebrooke's disclosure describes switching the frequency of the turn signal from 80 flashes per minute to 200 flashes per minute and vice versa. Neither patent describes, teaches, or suggests "wherein an intensity with which the turn signal lamp blinks is based upon the amount of time." Therefore, the combination of Dantoni and Middlebrooke not only requires the

[18] *In re McLaughlin,* 443 F.2d 1392, 170 U.S.P.Q. 209, 212 (CCPA 1971)[Obviousness rejection cannot be based only on knowledge gleaned from Applicants' disclosure.].
[19] *In re Royka,* 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

use of impermissible hindsight[20] to attempt to reconstruct Applicants' invention, but the combination fails to achieve all of the elements of the claims. Applicant respectfully requests that the rejection of claim 32 be withdrawn and that claim 32 be allowed.

With regards to claims 33-35, Applicant submits that claims 33-35 incorporate the limitations of claim 32. So Applicant respectfully requests that the rejections of claims 33-35 under 35 USC § 103(a) be reversed.

With regards to other claims not mentioned above, Applicant submits that the claims incorporate the limitations of independent claims discussed above. So Applicant respectfully requests that the rejections of these other claims be reversed.

[20] *In re McLaughlin,* 443 F.2d 1392, 170 U.S.P.Q. 209, 212 (CCPA 1971)[Obviousness rejection cannot be based only on knowledge gleaned from Applicants' disclosure.].

Conclusion

To anticipate claims under 35 U.S.C. § 102(b), each and every element as set forth in the claim must be described, either expressly or inherently, in a single reference [21] and in as complete of detail as is contained in the claim.[22] Middlebrook does not expressly or inherently describe the subject matter contained in the claims. Similarly, to establish a prima facie case of obviousness under 35 USC § 103(a), the modification or combination must teach or suggest all of Applicants' claim limitations. The combination of Middlebrook and Dantoni does not teach or suggest all of Applicants' claim limitations. Thus, the rejections should be reversed as improper.

While no fees are believed to be due, the Commissioner of Patents is hereby authorized to credit overpayments or debit underpayments via deposit account 50-3295.

Respectfully Submitted,

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Date

/Jeffrey S. Schubert/

Jeffrey S. Schubert, Reg. No. 43,098
Customer No.: 38518
Schubert Osterrieder & Nickelson PLLC
6013 Cannon Mtn. Dr, S14
Austin, Texas 78749
(512) 692-7297 (Telephone)
(512) 301-7301 (Facsimile)
Attorney for Appellant

[21] *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).
[22] *Richardson v. Suzuki Motor Co.,* 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

VIII. CLAIMS APPENDIX

TEXT OF CLAIMS PRESENTED ON APPEAL

WHAT IS CLAIMED IS:

1. A system to sense when a turn signal for a vehicle is active and the vehicle is turning and indicate that the vehicle is turning by varying a frequency and/or intensity with which the turn signal blinks, signaling to other motorists that the vehicle is turning, wherein the frequency and/or intensity with which the turn signal blinks is varied based upon an amount of time during which the vehicle is turning.

2. The system as described in claim 1 further comprising a microcontroller, or microcontrollers, to take switching and sensory inputs and output a pulsing sequence to a circuit of the microcontroller, or microcontrollers, that drives turn signal lamps when the vehicle is turning.

3. The system as described in claim 1 further comprising pulse generators, or other circuits where a duty cycle and an amplitude of the turn signal is dependent upon analog voltage levels, to output a pulsing sequence to a circuit that drives the turn signal lamps when the vehicle is turning.

4. The system as described in claim 1 further comprising a shaft position sensor, or other resistive, capacitive or inductive sensor, to determine an amount to alter the frequency or intensity of the turn signal.

5. The system as described in claim 1, wherein the system is adapted to adjust the turn signal frequency and/or intensity proportionally to a position of a shaft and/or the amount of time.

6. An apparatus to communicate a turn of a vehicle, the apparatus comprising:
a sensor to detect a position of a shaft of the vehicle;
a control circuit to generate an output signal, wherein the output signal varies in proportion to the position of the shaft; and
a turn signal lamp to produce a turn signal based upon the output signal, wherein the output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft.

7. The apparatus of claim 6, further comprising a switch to activate the control circuit to indicate the turn upon activation of the switch.

8. The apparatus of claim 6, wherein the control circuit is adapted to vary a wattage to vary the frequency of the turn signal.

9. The apparatus of claim 6, wherein the control circuit is adapted to vary a wattage of the output signal to vary the intensity of the turn signal.

10. The apparatus of claim 6, wherein the control circuit comprises a pulse generator to vary a duty cycle of the output signal.

11. An apparatus to communicate a turn of a vehicle, the apparatus comprising:
a sensor to detect an angle of a wheel of the vehicle;
a control circuit to generate an output signal, wherein the output signal varies based upon the angle of the wheel; and
a turn signal lamp to produce a turn signal based upon the output signal, wherein the angle of the wheel varies the frequency and/or intensity with which the turn signal lamp blinks.

12. The apparatus of claim 11, further comprising a switch to indicate the turn upon activation of the switch by a driver.

13. The apparatus of claim 11, wherein the control circuit comprises a microcontroller to drive the turn signal lamp.

14. A vehicle comprising:

a shaft;

a sensor to detect a position of a shaft;

a control circuit to generate an output signal, wherein the output signal varies in proportion to the position of the shaft; and

a turn signal lamp to produce a turn signal based upon the output signal, wherein the output signal varies a frequency and/or intensity with which the turn signal lamp blinks in proportion to the position of the shaft.

15. The vehicle of claim 14, wherein the control circuit comprises a pulse generator to vary a duty cycle of the output signal.

16. A vehicle comprising:

a wheel to turn the vehicle;

a sensor to indicate whether the vehicle is turning;

a control circuit to determine a sensor signal indicative of an amount of time that the vehicle has been turning and to generate an output signal, wherein the output signal varies based upon the amount of time; and

a turn signal lamp to produce a turn signal based upon the output signal, wherein the frequency and/or intensity with which the turn signal lamp blinks is varied based upon the amount of time.

17. The vehicle of claim 16, wherein the sensor comprises a shaft position sensor to determine an amount to alter the frequency or intensity of the turn signal based upon displacement of a shaft.

18. A vehicle comprising:

a wheel;

a sensor to detect an angle of the wheel;

a control circuit to generate an output signal, wherein the output signal varies based upon the angle of the wheel; and

a turn signal lamp to produce a turn signal based upon the output signal, wherein the angle of the wheel varies the frequency and/or intensity with which the turn signal lamp blinks.

19. The vehicle of claim 18, wherein the control circuit comprises a microcontroller generate a pulsing sequence to drive the turn signal lamp while the vehicle is turning.

20. A method for communicating a turn of a vehicle, the method comprising:
generating an output signal with a frequency that varies in proportion to a position of a shaft; and
outputting a turn signal in response to application of the output signal to a turn signal lamp, wherein the turn signal flashes in relation to the frequency.

21. The method of claim 20, wherein generating then output signal comprises varying an intensity of the turn signal.

22. The method of claim 20, wherein generating the output signal comprises varying a current to drive a thermal flasher for the turn signal.

23. The method of claim 20, wherein generating the output signal comprises varying a duty cycle of the turn signal.

24. The method of claim 20, wherein generating the output signal comprises varying the frequency based upon a rotational displacement between a previous position of the shaft and the position of the shaft.

25. A method for communicating a turn of a vehicle, the method comprising:
generating a output signal based upon an angle of a wheel of the vehicle to communicate the turn; and
applying the output signal to a turn signal lamp to vary a frequency with which the turn signal flashes based upon an angle of a wheel of the vehicle while the vehicle is turning.

26. The method of claim 25, wherein generating the output signal comprises varying a wattage applied to a blinker for the turn signal.

27. The method of claim 25, wherein generating the output signal comprises varying a duty cycle and amplitude of the output signal.

28. A method for communicating a turn of a vehicle, the method comprising:

generating an output signal to communicate the turn, wherein a frequency of the output signal varies based upon an amount of time the vehicle has been moving while the wheels are turned at an angle; and

applying the output signal to a turn signal lamp to vary a frequency with which the turn signal flashes.

29. The method of claim 28, wherein generating the output signal comprises varying an intensity of the turn signal.

30. The method of claim 28, wherein varying the intensity comprises varying a wattage applied to a blinker for the turn signal.

31. The method of claim 28, wherein varying the intensity comprises varying a duty cycle and amplitude of the turn signal.

32. A method for communicating a turn of a vehicle, the method comprising:

determining an amount of time the vehicle has been moving while the wheels are turned;

varying an output signal based upon the amount of time; and

applying the output signal to a turn signal lamp to produce a turn signal, wherein an intensity with which the turn signal lamp blinks is based upon the amount of time.

33. The method of claim 32, wherein varying the output signal comprises varying a frequency of the turn signal.

34. The method of claim 32, wherein varying the output signal comprises varying a duty cycle of the output signal to vary the intensity of the turn signal.

35. The method of claim 32, wherein applying the output signal comprises applying a varying wattage to a blinker for the turn signal.

36. A method for communicating a turn of a vehicle, the method comprising:
sensing an angle of a wheel of the vehicle while the vehicle is moving;
generating an output signal based upon the angle; and
applying the output signal to a turn signal lamp to vary an intensity with which the turn signal lamp blinks based upon the angle.

37. The method of claim 36, wherein applying the output signal comprises varying a wattage applied to the turn signal lamp.

38. The method of claim 36, wherein applying the output signal comprises outputting a turn signal with a varying duty cycle and amplitude.

39. A method for communicating a turn of a vehicle, the method comprising:
sensing a position of a shaft of the vehicle;
generating an output signal for the vehicle, wherein a wattage of the output signal varies based upon the position of the shaft; and
applying the output signal to a turn signal lamp to vary an intensity with which the turn signal lamp blinks based upon the position.

40. The method of claim 39, wherein generating the output signal comprises varying a duty cycle and amplitude of the output signal.

IX. EVIDENCE APPENDIX

Other than the Office Action(s), prior Appeal brief, and reply(ies) already of record, no additional evidence has been entered by Appellants or the Examiner in the above-identified application which is relevant to this appeal.

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X. RELATED PROCEEDINGS APPENDIX

There are no related proceedings as described by 37 C.F.R. §41.37(c)(1)(x) known to Appellants, Appellants' legal representative, or assignee.